What is claimed is:

1. A data communication method comprising the steps of:

on a transmitting side, converting analog signals comprising voice or music or digital signals obtained by digitizing voice or music into non-return-to-zero digital signals formed by 1-bit data streams using a noise shaping method;

on the transmitting side, using a high level for converted digital signals of "1" and using a low level for converted digital signals of "0", and when a high level is used the converted digital signals are converted into return-to-zero signals having a pulse width smaller than the pulse width of non-return-to-zero signals and then the return-to-zero signals are output, and when a low level is used the converted digital signals are output as they are at a low level;

on the transmitting side, transmitting the output signals as radio signals;

on a receiving side, receiving the radio signals from the transmitting side; and

on the receiving side, driving a musical sound output section by electrical signals obtained from the received signals so as to convert the electrical signals into musical sound signals.

2. A data transmitting apparatus comprising:

a 1-bit conversion section that converts analog signals comprising voice or music or digital signals obtained by digitizing voice or music into non-return-to-zero digital signals formed by 1-bit data streams using a noise shaping method;

a return-to-zero section that uses a high level for converted digital signals of "1" and a low level for converted digital signals of "0", and for a high level converts the

converted digital signals into return-to-zero signals having a pulse width smaller than the pulse width of non-return-to-zero signals and then outputs the return-to-zero signals, and for a low level outputs the converted digital signals as they are at a low level, and

a radio transmitting section that outputs the return-to-zero digital signals as radio signals.

3. The data transmitting apparatus according to claim 2, wherein the radio transmitting section is an infrared ray transmitting section that transmits the return-to-zero digital signals in accordance with the physical layers of Fast IrDA Physical Layer (FIR), which is a digital infrared ray communication standard.

4. The data transmitting apparatus according to claim 2, wherein the return-to-zero section makes the pulse width of the return-to-zero digital signals for the high level between 10% or more and less than 90% of the pulse width of non-return-to-zero signals.

5. The data transmitting apparatus according to claim 2, wherein the return-to-zero section makes the pulse width of the return-to-zero digital signals for the high level between 5% or more and less than 40% of the pulse width of non-return-to-zero signals.

6. A data transmitting program comprising:

a zero insertion function in which a number p (wherein p is a natural number) of data representing "0" are inserted for each bit in a 1-bit data stream obtained by performing noise shaping processing on analog signals comprising voice or music or digital signals obtained by digitizing voice or music; and

a transmitting function in which, by sending 1-bit data streams in which the "0" data have been inserted at a speed of (p + 1) times a noise shaping frequency used by the noise shaping processing to a radio transmitting section, return-to-zero digital signals are transmitted in which the pulse width at high level is { 100/ (p + 1) } % the pulse width at high level of non-return-to-zero signals.

7. The data transmitting program according to claim 6, wherein there is further provided a 1-bit quantization function that generates the 1-bit data stream by performing the noise shaping processing on the analog signals or digital signals.

8. A data receiving apparatus comprising:

a radio receiving section that receives by radio return-to-zero digital signals obtained by converting analog signals comprising voice or music or digital signals obtained by digitizing voice or music into digital signals formed by 1-bit data streams, and in which for a logic value of "0" a low level is allocated, while for a logic value of "1" a high level having a pulse width smaller than the pulse width of non-return-to-zero signals is allocated;

a musical sound output section that converts electrical signals into musical sound signals; and

a drive section that generates return-to-zero drive signals as the electrical signals to drive the musical sound output section based on the return-to-zero digital signals received by the radio receiving section.

9. The data receiving apparatus according to claim 8, wherein the radio receiving

section is an infrared ray receiving section that receives by radio the return-to-zero digital signals in accordance with the physical layers of Fast IrDA Physical Layer (FIR), which is a digital infrared ray communication standard.

10. The data receiving apparatus according to claim 8, wherein there is further provided a pulse width extension section that extends pulse widths of high level drive signals that have a pulse width of less than 100% of the pulse width of high level non-return-to-zero signals to a pulse width of 100% that of the non-return-to-zero signals or a pulse width near to 100% that of the non-return-to-zero signals, and then outputs them to the drive section.

11. The data receiving apparatus according to claim 8, wherein there is further provided a filter section having a high pass filter that removes a DC component contained in the drive signals, and a low pass filter that removes shaping noise signal components in a vicinity of voice signal components contained in the drive signals.

12. The data receiving apparatus according to claim 11, wherein the filter section is provided with:

a first resistor having one end terminal connected to a first input terminal;

a first inductor having one end terminal connected to another end terminal of the first resistor;

a first capacitor having one end terminal connected to another end terminal of the first inductor;

a second resistor having one end terminal connected to a second input terminal;

a second inductor having one end terminal connected to another end terminal of the second resistor;

a second capacitor having one end terminal connected to another end terminal of the second inductor;

a third capacitor placed between the other end terminal of the first inductor and the other end terminal of the second inductor;

a third resistor placed between another end terminal of the first capacitor and a ground;

a fourth resistor placed between another end terminal of the second capacitor and a ground,

wherein the other end terminal of the first capacitor is made a first output terminal, and the other end terminal of the second capacitor is made a second output terminal.

13. The data receiving apparatus according to claim 11, wherein the filter section is provided with:

a first capacitor having one end terminal connected to a first input terminal;

a first resistor placed between another end terminal of the first capacitor and a ground;

a second resistor having one end terminal connected to the other end terminal of the first capacitor;

a first inductor having one end terminal connected to another end terminal of the second resistor;

a second capacitor having one end terminal connected to a second input terminal;

a third resistor placed between another end terminal of the second capacitor and the

ground;

a fourth resistor having one end terminal connected to the other end terminal of the second capacitor;

a second inductor having one end terminal connected to another end terminal of the fourth resistor; and

a third capacitor placed between another end terminal of the first inductor and another end terminal of the second inductor,

wherein the other end terminal of the first inductor is made a first output terminal, and the other end terminal of the second inductor is made a second output terminal.